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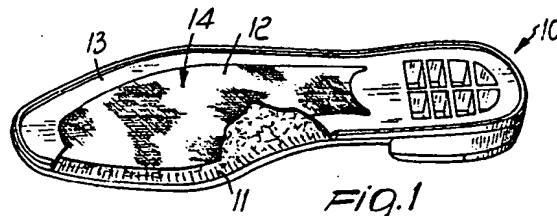
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(54) **Waterproof transpiring sole for footgear.**

(57) Waterproof and transpiring sole (10) for footgear including a tread (11) made of leather or similar material which is at least partially covered, in an upward region, by a membrane (12) made of vapor-permeable and waterproof material. The tread is assembled, at least along its perimeter, together with at least one upper part (13) made of rubber or equivalent material which has a central opening (14) in the region affected by the membrane.



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The present invention relates to a waterproof and transpiring sole for footwear.

As is known, the main problem observed in using footwear having a normal sole made of a natural material, such as leather or equivalent materials, is wet weather.

When rain and bad weather make the streets wet and slippery, it is in fact undesirable to use footwear with leather soles, since the leather, indeed because it is vapor-permeable and healthy for the foot, is not waterproof but on the contrary absorbs water.

The thinner the leather, the faster it becomes impregnated with water or moisture until it wets the user's foot.

This drawback also combines with the fact that the leather tread has no pattern, is smooth, or often even polished with waxes.

This is an additional problem in wet weather, since grip is unreliable in such conditions.

Accordingly, use of soles with a leather tread is limited by weather conditions and for this reason footwear made of this kind of material is generally provided by manufacturers in the summer collections in countries where the dry season is predominant.

Up to now, this drawback has been obviated by inserting between the leather tread and the foot resting region a polyurethane or PVC element, which however inhibits transpiration and confines the use of leather to a mere aesthetic effect.

A principal aim of the present invention is to provide a sole that solves the drawbacks described above in known types of footwear with a leather tread.

A further aim is to provide a sole having also good characteristics of grip on the ground in all conditions of use.

Another aim of the present invention is to provide a sole having also shock-absorbing characteristics.

Another important aim is to provide a sole having the same advantages as those with a leather tread that are currently commercially available.

Another aim is to increase user comfort.

Another aim of the invention is to provide a sole that can be manufactured at a low cost and can thus be sold at a competitive price.

Another aim is to provide a sole that can be manufactured with known equipment and methods.

With this and other aims in view, there is provided, according to the present invention, a waterproof and transpiring sole for footwear, characterized in that it comprises a tread made of leather or of a similar material which is at least partially covered, in an upward region, by a membrane of vapor-permeable and waterproof material and is assembled, at least along its perimeter, together

with at least one upper part made of rubber or equivalent material which has one or more through holes at least in the regions affected by said membrane.

Further characteristics and advantages of the present invention will become apparent from the following detailed description of some preferred embodiments thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a partially sectional perspective view of a first embodiment of the sole;

figure 2 is a perspective transverse sectional view of the sole of figure 1;

figure 3 is a perspective exploded view of a second embodiment of the sole;

figure 4 is a perspective transverse sectional view of the sole of figure 3 in assembled condition;

figure 5 is an exploded perspective view of a third embodiment of the sole;

figure 6 is a perspective transverse sectional view of the sole of figure 5 in assembled condition.

With reference to the above mentioned figures 1 and 2, a first embodiment of the waterproof and transpiring or vapor-permeable sole for footwear is generally designated by the reference numeral 10 and comprises a tread 11 made of leather or similar material which is covered, in an upward region, substantially in the plantar region, by a membrane 12 which is impermeable and vapor-permeable and preferably made of a material such as the one commonly termed Gore-Tex or another equivalent material.

The membrane 12 is spaced, along its perimeter, from the edge of the tread 11, and forms a monolithic body therewith, since it is joined to it by means of appropriate adhesives which are for example spread on it along its perimeter.

An upper perimetric part 13 made of rubber, polyurethane, PVC or other equivalent material is assembled onto the tread 11, for example by injection-molding, and covers the peripheral regions of the membrane 12, leaving a wide central opening 14 at its tapered inner edges where said membrane is exposed.

The membrane 12 forms a barrier against water and moisture, but preserves the vapor-permeability characteristics given to the sole by the presence of the leather tread 11. Thus water is prevented from passing from the bottom and through the sole while vapor can pass from the top and through the sole.

With reference now to the above mentioned figures 3 and 4, in a second embodiment the sole is generally designated by the reference numeral 110 and comprises a tread 111 made of leather or

similar material which is provided with through holes 112 in a perimetric region.

The tread 111 is covered, in a region that lies inward with respect to the holes 112, by a membrane 113, similar to the previously mentioned membrane 12, which is joined thereto by means of appropriate adhesives.

In an upward region, a perimetric part 114 made of rubber, polyurethane, TR, PVC or equivalent material is assembled together with the tread 111, for example by injection molding, and encloses the edges of the membrane 113, leaving a wide central opening 115 in which said membrane is exposed.

Said part 114 has studs 116 that fill the through holes 112 and, if the part is manufactured by injection molding, are produced directly by this same operation.

The studs 116 form, with their lower parts, regions of the tread made of a material having adequate grip characteristics in all use conditions, both in dry weather and in wet weather.

The upper part 114 can be assembled onto the tread 111 not only by injection molding but also by joining the previously formed elements with adhesives, by pouring the part 114 on the tread 111 provided with the membrane 113 inside a mold, or by simple snap-together coupling with waterproofed stitches.

With reference now to the above mentioned figures 5 and 6, in a third embodiment the sole is designated by the reference numeral 210 and comprises a tread 211 made of leather or similar material which is covered, in an upward non-peripheral region, by a membrane 212 which is joined thereto for example by means of adhesives spread in perimetric regions thereof.

A mid-sole 213, made of a soft material such as polyurethane, EVA or equivalent products having shock-absorbing functions, is assembled together with the tread 211 in an upward region.

The mid-sole 213 fully covers the tread 211 even in the region of the membrane 212, indeed because it must perform its shock-absorbing function, but in this central region it has through holes 214 which are suitable to nonetheless allow transpiration from the inside outwards.

In further embodiments of the sole it is possible to combine on the tread a portion with rubber studs in through holes of said tread with a shock-absorbing portion.

In practice it has been observed that the intended aim and objects of the present invention have been achieved.

The sole in fact has the qualitative characteristics of leather soles, particularly vapor permeability, together with the qualitative characteristics of soles made of rubber or synthetic material, particularly

impermeability.

In its various embodiments, the sole also has antislip and shock-absorbing characteristics.

It should be noted that the sole can be manufactured without particular difficulties with conventional production methods.

The invention thus conceived is susceptible to numerous modifications and variations, all of which are within the scope of the inventive concept.

All the details may furthermore be replaced with other technically equivalent elements.

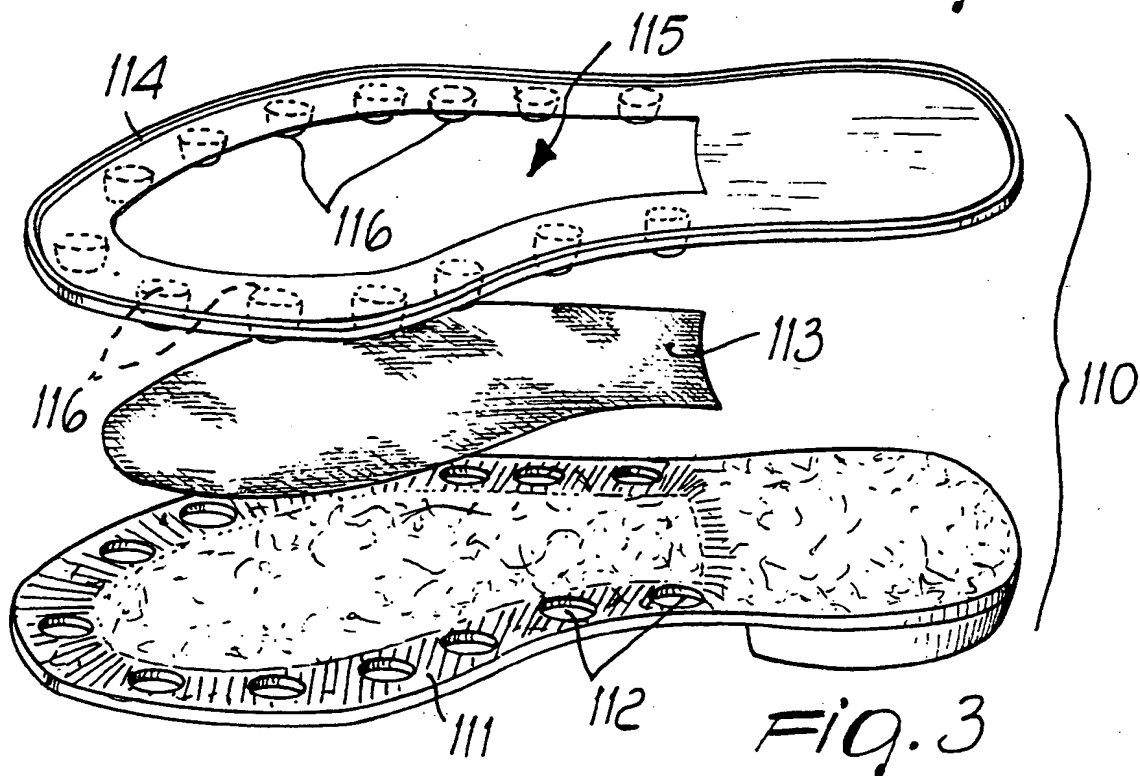
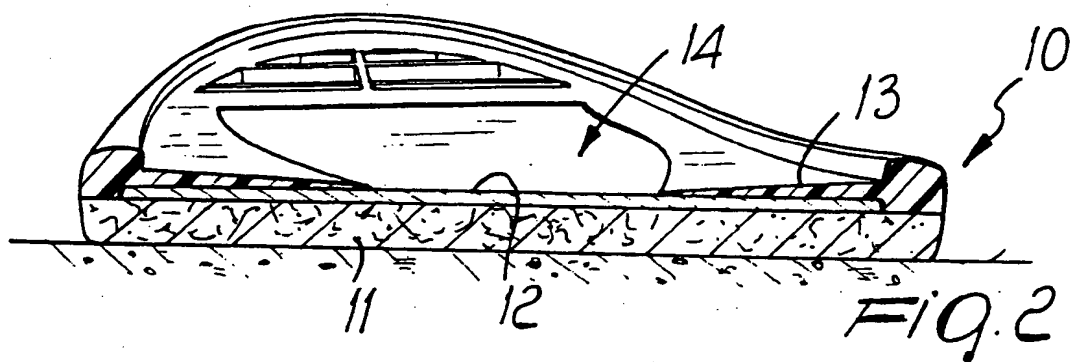
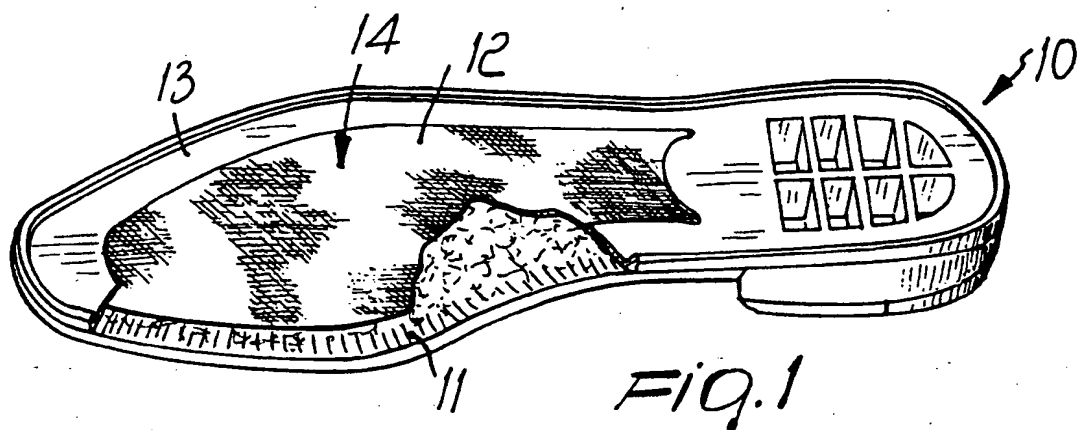
In practice, the materials employed, so long as they are compatible with the contingent use, as well as the dimensions, may be any according to the requirements.

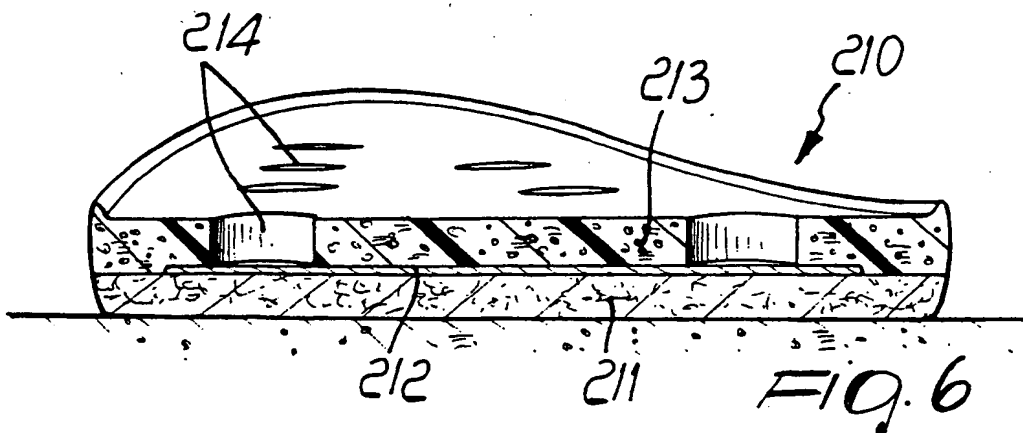
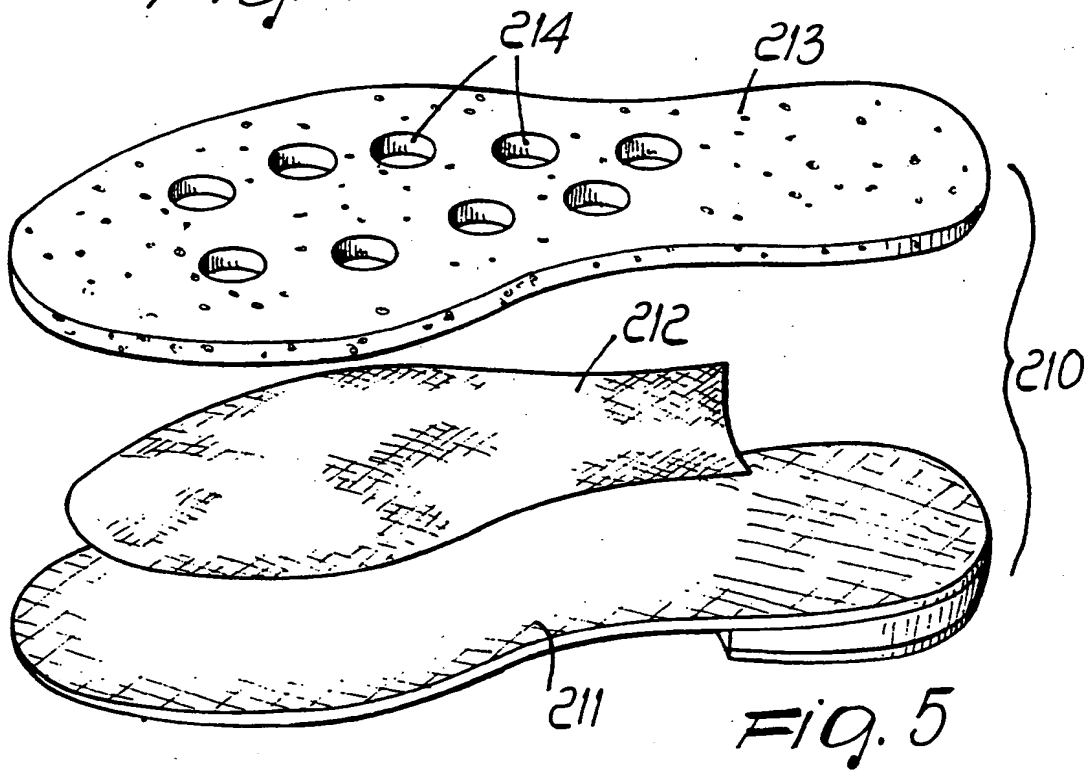
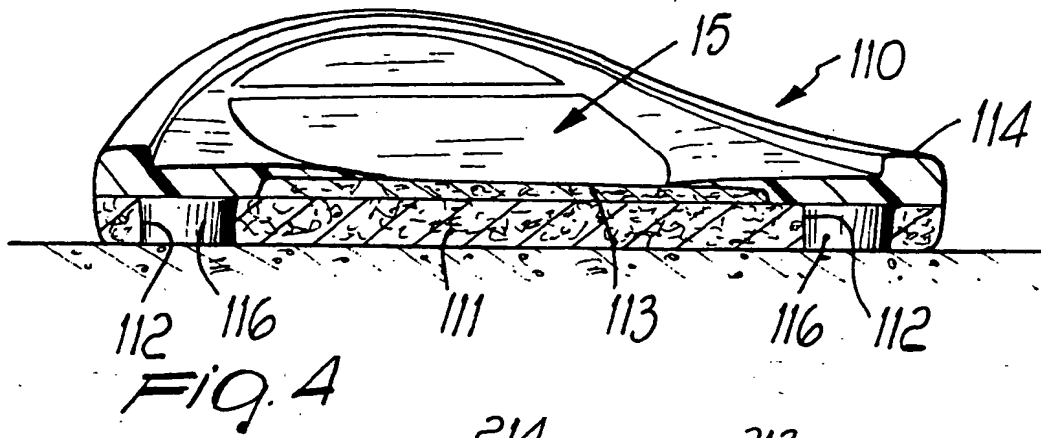
Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Waterproof and transpiring sole (10;110;210) for footgear, comprising a tread (11;111;211) made of leather or of a similar material which is at least partially covered, in an upward region, by a membrane (12;113;212) of vapor-permeable and waterproof material and is assembled, at least along its perimeter, together with at least one upper part (13;114;213) made of rubber or equivalent material which has one or more through holes (14;115;214) at least in the regions affected by said membrane.
2. Sole according to claim 1, characterized in that said upper part (114) made of rubber or equivalent material passes through said tread, in through holes (112) thereof, with studs (116) with which it is provided, said studs ending substantially at the ground contact level.
3. Sole according to claim 2, characterized in that said upper part is made of soft shock-absorbing materials such as polyurethane, EVA or equivalent materials.
4. Sole according to claim 2, characterized in that said upper part made of rubber or equivalent material is covered by a part made of soft shock-absorbing material such as polyurethane, EVA or equivalent materials with through holes at said membrane.

5. Sole according to one or more of the preceding claims, characterized in that said membrane substantially covers the plantar region and is spaced from the edge of said tread along its perimeter. 5
6. Sole according to one or more of the preceding claims, characterized in that said membrane is joined to said tread by means of adhesives which are spread so that they do not hinder transpiration. 10
7. Sole according to one or more of the preceding claims, characterized in that said membrane made of vapor-permeable and waterproof material is constituted by the material commonly termed Gore-Tex or by equivalent material. 15
8. Sole according to one or more of the preceding claims, characterized in that said upper part made of rubber or equivalent material affects the perimeter of said tread and covers the edges of said membrane. 20
9. Sole according to claim 8, characterized in that said upper part made of rubber or equivalent material is assembled onto said tread by injection molding, by pouring into a mold, by stitching, by gluing or by an equivalent technique. 25
10. Sole according to one or more of the preceding claims, characterized in that said one or more through holes of said upper part made of rubber or other equivalent material have tapered edges. 30
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EUROPEAN SEARCH REPORT

Application Number
EP 94 10 2573

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
Y	EP-A-0 284 638 (KUK SCHUHFABRIK GMBH) ---	1-10	A43B13/14 A43B7/12
Y	DE-A-25 25 614 (PUMA SPORTSCHUHFABRIK RUDOLF DASSLER KG) * page 6; figures * ---	1-10	
A	DE-U-85 05 944 (LICO SPORTSCHUHFABRIKEN LINK & CO GMBH) ---	2	
Y	US-A-4 819 345 (MULCAHY ET AL.) ---	1-10	
Y	DE-A-30 05 425 (BELLI ET AL.) ---	1-10	
A	US-A-2 152 657 (MONTGOMERY) ---	2	
Y	EP-A-0 226 948 (ERNST) ---	1-10	
Y	DE-A-40 02 667 (AUMANN) ---	1-10	
A	EP-A-0 479 183 (POL SCARPE SPORTIVE S.R.L.) ---	1-10	
A	EP-A-0 275 644 (JAPAN GORE-TEX, INC.) -----	1,7	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 1 July 1994	Examiner Mathey, X
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

